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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,966	08/21/2003	Koji Nakazawa	101175-00034	7581

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EXAMINER	
ZHENG, LOIS L	

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/644,966	NAKAZAWA ET AL.	
	Examiner	Art Unit	
	Lois Zheng	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 1 and 3 are amended in view of the amendment filed 24 January 2006. Therefore, claims 1-5 remain under examination.

Status of Claims

2. The objection of abstract is withdrawn in view of the amended abstract filed 24 January 2006.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moulthrop, Jr. et al. US 6,383,361 B1(Moulthrop) in view of Cisar et al. US 5,635,039 (Cisar), or further in view of Casson US 3,720,164(Casson).

As stated in paragraph 6 of the previous Non-Final Office Action mailed 3 November 2005, Moulthrop teaches a water electrolysis system comprising an electrolysis cell stack(Fig. 4 numeral 61), an oxygen/water separation tank(Fig. 4 numeral 100) and a phrase separation tank(Fig. 4 numeral 82).

Regarding instant claim 1, the electrolysis cell stack of Moulthrop reads on theclaimed water electrolysis means. The oxygen/water separation tank of Molthroup reads on the claimed gas/liquid separation means. Moulthrop further teaches that the

water exiting from the phrase separation tank is pumped back into the electrolysis cell(Fig. 4 numerals 72 & 94, col. 4 lines 36-38). Therefore, the claimed backflow means is inherently present in the water electrolysis system of Moulthrop. Moulthrop further teaches that the oxygen/water exiting from the electrolysis cell stack is introduced to the oxygen/water separation tank(Fig. 4 numerals 98 & 100, col. 4 lines 40-42). Therefore, the claimed discharge open is inherently present in the cell stack of Moulthrop. The oxygen/water separation tank(i.e. gas/liquid separation means) of Moulthrop is directly connected to the discharge opening through which the oxygen/water mixture is brought out from the cell stack(i.e. water electrolysis means).

However, Moulthrop does not explicitly teach the water electrolysis cell stack comprises the claimed pair of catalyst layers separated by an electrolyte membrane. Moulthrop also does not explicitly teach the amended feature of "[t]he gas/liquid mixture of oxygen and pure water is brought out from said water electrolysis means without any intermediate piping".

Cisar teaches an electrochemical cell that can be used as a water electrolyzer (abstract, col. 1 lines 19-21, col. 28, lines 31-43). Cisar further teaches a pair of catalyzed electrodes separated by a proton exchange membrane(col. 5 line 62-col. 6 line 3, col. 8 line 20 – col. 9 line 32).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the pairs of catalyzed electrodes separated by a proton exchange membrane as taught by Cisar into the water electrolysis system of Moulthrop in order to

increase the performance of the electrochemical cell by as taught by Cisar(col. 9 lines 10-12).

Casson teaches using purified water in making corrosion resistant metallic lithographic plates(abstract). Casson further teaches that metal pipings and vessels can cause contaminations to the water(col. 4 lines 8-11).

Regarding the "intermediate piping" limitation, Moulthrop is silent about any intermediate piping between the electrolysis cell stack and the oxygen/water separation tank. Therefore, the examiner asserts that the oxygen/water mixture directly flows into the oxygen/water separation tank through the discharge opening without intermediate piping as claimed. Even if Moulthrop were to disclose the intermediate piping, it would have been obvious to one of ordinary skill in the art to have eliminate any possible intermediate piping between the water electrolysis cell and the gas/liquid separation means as taught by Moulthrop in view of Cisar in order to avoid any potential contamination of the water from the piping as taught by Casson.

In addition, the examiner is interpreting the claimed water electrolysis system as a one-piece system since both the claimed gas/liquid separating means and the electrolysis cell share a common wall. Therefore, one of ordinary skill in the art would have found the claimed one piece water electrolysis system an obvious engineering choice since the claimed water electrolysis system is simply a result of integrating the separate water electrolysis cell and the gas/liquid separation means as taught in the apparatus of Moulthrop in view of Cisar and Casson. In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). See 2144.04(V).

Furthermore, the claimed language "electrolyzes pure water supplied to said catalyst layers, and brings out hydrogen from one catalyst layer and brings out a gas/liquid mixture of oxygen and pure water from the other catalyst layer;" is interpreted as process limitations, therefore, does not lend patentability to instant claim 1. The water electrolysis system of Moulthrop in view of Cisar is inherently capable of performing the claimed process limitations since Moulthrop in view of Cisar teaches a water electrolysis system that is the same as that of the instant invention.

Regarding instant claim 2, Moulthrop further teaches that the gas phrase separation tank(Fig. 4 numeral 82) comprises ion exchange resin(Fig. 3 numeral 81) to remove any cationic and anionic impurities(col. 3 lines 11-17, col. 4 lines 32-33). Therefore, the ion exchange resin containing gas phrase separation tank as taught by Moulthrop in view of Cisar reads on the claimed purifying means for purifying water with the aid of ion exchange resin wherein the purified water is flown back to the water electrolyzer.

Regarding instant claim 3, the examiner is interpreting the claimed water electrolysis system as a one-piece system since the claimed the electrolysis cell, the claimed gas/liquid separating means and the claimed gas phrase separation tank(i.e. purifying means) share common walls. Therefore, one of ordinary skill in the art would have found the claimed one piece water electrolysis system an obvious engineering choice since the claimed water electrolysis system is simply a result of integrating the water electrolysis cell, the oxygen/water separation tank(i.e. gas/liquid separation means) and the gas phrase separation tank(i.e. purifying means) as taught in the

apparatus of Moulthrop in view of Cisar and Casson. In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). See 2144.04(V).

In addition, one of ordinary skill in the art would have found it obvious to place the purifying means of Moulthrop in view of Cisar next to the electrolysis cell, thereby sharing a common wall with the electrolysis cell, in order to eliminate the need for an intermediate piping to avoid potential contamination from the piping over time as taught by Casson.

Regarding instant claim 5, Moulthrop further teaches that the gas phrase separation tank(i.e. purifying means) comprises a filter medium(Fig. 3 numeral 84). Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the filter medium in the gas phrase separation tank of Moulthrop into the oxygen/water separation tank of Moulthrop in view of Cisar(i.e. gas/liquid separation means) in order to sufficiently removing particulates in the water such that the re-circulated water will not contaminate the electrochemical cell as taught by Moulthrop(col. 3 lines 19-23).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moulthrop in view of Cisar and Casson, and further in view of Murphy et al. US 5,460,705(Murphy).

The teaching of Moulthrop and Cisar and Casson are discussed in paragraph 4 above. However, Moulthrop in view of Cisar and Casson do not teach the claimed intake opening for supplying mint pure water to the water electrolyzer.

Murphy teaches a water electrolyzer for producing ozone(abstract). The water electrolyzer of Murphy comprising an electrolysis cell stack of proton exchange

membrane separated catalyst coated anodes and cathodes(Fig. 6 numeral 72) and a gas/liquid separation tank(Fig. 6 numeral 74) equipped with a intake pipe(Fig. 6 numeral 86) for makeup deionized water(col. 15 lines 56-57).

Regarding instant claim 4, it would have been obvious to one of ordinary skill in the art to have incorporated the deionized water intake pipe of Murphy into the oxygen/water separation tank of Moulthrop in view of Cisar and Casson in order to makeup the water to the water electrolyzer as taught by Murphy(col. 15 lines 56-57).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SUPERVISORY PATENT EXAMINER
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